

The effect of humor on group effectiveness and the mediating role of psychological safety

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Abstract This study empirically investigates the relationships between adaptive and maladaptive humor styles and the three indicators of group effectiveness, namely productivity, development and group viability. Data was collected from a final sample of 191 students from tutorial groups of Maastricht University. Adaptive humor was found to be positively and maladaptive humor was found to be negatively related to productivity, development and group viability. Psychological Safety was found to mediate the relationship between the two humor styles and group effectiveness with partial mediation for development and adaptive humor and development as well as group viability and maladaptive humor. The results of this study provide insights in humor research, by discerning differences between the two types of humor. Findings and implications for future research are discussed.

Keywords adaptive humor ▪ maladaptive humor ▪ psychological safety ▪ groups ▪

group effectiveness

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1. Introduction

The term humor derives from the ancient Greeks humoral medicine, which taught that the balance of fluids in the human body, also known as “humours“, controlled human health and emotions (Richet, 1910). Nowadays, the term stands for the tendency of particular cognitive experiences that provoke laughter and provide amusement. The social phenomenon of humor is omnipresent and visible in people’s life. Humor can shape perceptions in a positive way due to more fun and joy, but can also have a negative influence. However, humor is not only part of people’s everyday life, it can also have an impact on an organizational level. It plays an important role in organizations and researchers have discovered that it can profit organizational behavior in various ways (Cooper, 2005; Terrion & Ashfort, 2002 and Romero & Cruthirds, 2006).

Past research has not only found evidence on the personal, the intra-level, but also on the social, namely the inter-level. On the *intra-level*, evidence has been found in which humor helps to obtain higher working conditions. (Wanzer, Booth-Butterfield & Booth-Butterfield, 2005). Furthermore, positive correlations with creativity, well-being, self-esteem, positive affect, and motivation have been found in the context of the workplace (Wood, Beckmann & Pavlakis, 2007; Kuiper, McKenzie & Belanger, 1995) whereas negative correlations have been found with depression, worry and anxiety (e.g. Thorson, Powell Sarmany-Schuller & Hampes, 1997; Nezu, Nezu & Blisset, 1988; Kelly, 2002 and Smith, Ascough, Ettinger & Nelson, 1971). When it comes to the *inter-level*, evidence in research has shown that humor was able to lead to better group member cooperation, less conflict and higher ratings of performance (Barsade, 2002). Moreover, it has been revealed that humor is effective when wanting to reduce social distance between group members (Graham, 1995) and it also represents a socially acceptable mean when communicating discontent (Romero & Cruthirds, 2006).

Even though many authors have underlined the positive aspects of humor, negative influences cannot be ignored. This has been revealed by the fact that humor has been linked to low leadership performance (Wood et al., 2007), depression (Kuiper, Grimshaw, Leite & Kirsh., 2004) and emotional exhaustion, such as burnout (Tümekaya, 2007).

Especially when it comes to group work humor can play a crucial role. Younger employees in today's society expect their workplace to be enjoyable and fun. They have higher expectations towards their employer and would even go as far as quitting their job if their demands cannot be fulfilled (Levine, 2005). Also, job tasks and requirements have changed, compared to the past. Nowadays, daily tasks are not as static and mechanic anymore. Consequently, skills such as creativity, collaborative working and flexibility have become elementary (Lawler, 1998; Strozniak, 2000).

Whereas many different forms of social aspects have been linked to group effectiveness, the role of humor has been untapped in the past. Surprisingly, no research has examined the effects that humor can have on group performance indicators, while accounting for the use of different styles of humor. Thus, this study contributes to the research gap by answering the following research question:

What is the effect of adaptive and maladaptive humor on group effectiveness?

The contributions of this study will be the following: First of all, the investigation of the effect of humor on group effectiveness in actual working groups makes it the first of its kind. Not just the positive, adaptive humor style, but also the negative, maladaptive humor style will be investigated with a modified version of the Humor Styles Questionnaire (Martin, Puhlik-Doris, Larsen, Gray & Weir, 2003). Second, the mediating role of psychological safety will be tested in the context of adaptive and maladaptive humor. This combination of concepts has not been assessed in organizational research so far. The concepts will be discussed in detail in the

following parts of this study and will be examined in the relationship between humor and group effectiveness. Sundstrom, De Meuse and Futrell (1990) claim that focusing on one particular group performance indicator could not just harm group member's well-being and their group viability, but also stakeholder's satisfaction. Hence, this study also analyses the long-term effects that humor can have by taking Hackman's (1987) normative theory of group effectiveness into account, which is constituted by groups' productivity, development and group viability.

2. Literature Review & Hypotheses

Clarification of the term Humor

In order to grasp the whole concept of humor, we first need to clarify the word itself. In the Middle Age people believed that four types of humor existed and that a good balance of humor would lead to humans being healthy or "in a good mood" (Lyttle, 2007). The word humor has also been used as a synonym for fluid. Today, it is still being used in regards to body fluids such as the vitreous humor, which is a gel-like substance that fills the space between the lens and the retina of the human eyeball. In modern days "humoring someone" has been connoted with anything that makes people feel good, hence humor is being associated with enjoyment (Lyttle, 2007).

Humor can also be defined by the three main humor theories, namely the incongruity theory, the superiority theory and the relief theory. Immanuel Kant's *incongruity theory* (1951) tries to clarify situations that make them funny in the eye of the beholder. The theory describes that people tend to laugh about combinations of things that have been put together, by accident or on purpose, even though they are usually unrelated (Suls, 1972; Meyer, 2000). Whereas Kant's incongruity theory tries to explain "what" it is about certain things that make them funny, Thomas Hobbes *superiority theory* tries to explain "when" it is that we find things funny (Hobbes, 1968). The theory suggests that people use humor to gain control (LaFave, Haddad &

Maeson, 1976) and that laughing is a reaction to a feeling of superiority towards people, things or situations (Ziv, 1984; Lyttle, 2007). Sigmund Freud's *relief theory* claims that we laugh at topics that are linked to suppressed emotions and feelings such as sex and aggression. The laughter is a reaction that discharges tension (Shurcliff, 1968) and bottled up feelings (Freud, 1928; Lyttle, 2007). Romero & Pescolido (2008) assert that there is not one best theory of humor. Instead, the best description is dependent upon the situation. That is why the three theories of humor can be seen as a "contingency theory of humor", due to the ability to describe how humor works in different situations (Romero & Pescolido, 2008).

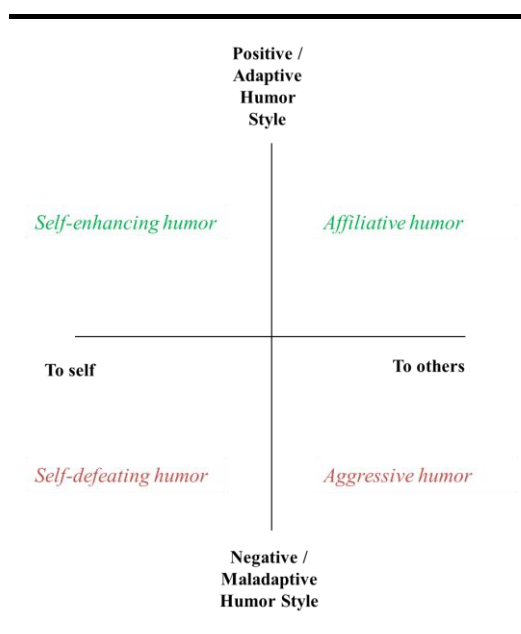
It is noticeable that despite the variety of different theories, there is still not one clear definition of humor. The term is multifaceted and can be conceptualized in numerous ways, such as an emotional response, a situational stimulus or a mental process (Martin, 2001). Likewise, it involves behavioral, cognitive, psychological, social and emotional aspects (Martin, 2001). However, several researchers came to the conclusion that humor is able to create a mental detachment from an event. This allows individuals to approach the event from a non-serious perspective. As a consequence, positive or negative tensions can be released (Martin, 2001; Morreall, 1997; Thomas, 2000). The use of humor serves individuals to distance themselves from situational elements and reorder them in a way that triggers positive emotions, such as gladness and merriment (e.g. expressed by laughter), which has been labeled as *mirth* (Romero & Cruthird, 2006; Redlich, Levine & Sohler, Thomas 2000). Nonetheless, some individuals might not feel as delighted by the use of humor. This is due to misinterpretation, failed humor, put-downs or incomprehension. These incidents are caused by the fact that what is funny to one person in a particular situation might not necessarily be funny to another person. Thus, humor has been designated by many scientists as a "double-edged sword" (Romero & Pescolido, 2008; Rogerson-Revell, 2007; Lyttle, 2007).

In order to account for the differences in humor, scholars have started to differentiate between positive humor, also known as adaptive humor, and negative humor, known as maladaptive humor (Yip & Martin, 2006; Kuiper & McHale, 2009; Guenter, Schreurs, Emmerik, Gisjbers & van Iterson, 2013). The differences between the two terms will be discussed in the next section.

Adaptive Humor Style vs. Maladaptive Humor Style

The opposing concepts of adaptive and maladaptive humor have also been termed as positive and negative forms of humor. These can be divided into four different humor styles: the self-enhancing, the affiliative, the self-defeating and the aggressive humor style. On the one hand, the adaptive humor is comprised by the self-enhancing and the affiliative humor style, while on the other hand, the maladaptive humor is comprised by the self-defeating and the aggressive humor style (see Figure 1).

Figure 1
Humor Styles



Self-enhancing humor is defined as a way to maintain a positive perspective on life when handling issues and problems and serves as a mean to be amused by the absurdities of life

(Veselka, Schermer, Martin, & Vernon, 2010). *Affiliative humor* can be used to reduce tension between targets and amuses the recipients of that type of humor which eases interpersonal relationships (van den Broeck, Vander Elst, Dikkers, De Lange, De Witte, 2012). The first of the two maladaptive humor style, namely *self-defeating humor*, is a negative form of putdown humor directed towards oneself in order to amuse or comfort others (van den Broeck et al., 2012). Last but not least, *aggressive humor* is an offensive form of humor that is used to criticize, offend and manipulate others, but also occurs when making use of humor in inappropriate situations (Martin et al., 2003; Wood et al., 2007 and Veselka et al., 2010).

Group Effectiveness

As previously described, this paper tries to assess the effect of humor on group effectiveness and hence, the latter concept needs to be clarified. Based on the multidimensional nature of group effectiveness, researchers have come up with a variety of definitions (Cohen & Bailey, 1997; Hackman, 1987; van der Haar, Sergers & Jehn, 2013; Tannenbaum, Beard & Salas, 1992). In their article “What makes teams work”, the authors Cohen and Bailey (1997) refer to three dimensions of group effectiveness: performance effectiveness, member attitudes and behavioral outcomes. Another scientist that addresses this topic is Richard Hackman (1987), who acknowledged the difficulties of assessing organizational group effectiveness in his so called normative model of group effectiveness.

In his view, work groups in organizations are characterized by three factors. Firstly, work groups can be seen as real groups. By this he means that groups are an intact social system where group membership is stable over a period of time and that clear team boundaries are present that clarify who is inside or outside of the group. Secondly, groups have at least one task to perform and thirdly, groups operate within an organizational context. This can include groups in all kinds of fields such as in the work environment, sports or the academic environment.

In a general manner it is rather easy to tell how well a group has performed due to straight forward measures such as the finishing time or the group's accuracy. However, when put in an organizational context, the assessment of the group's performance becomes more complex. The reason for this is that tasks are harder to quantify and as a consequence also more difficult to judge. In addition, there is a great chance that people in work groups will continue to relate to one another in the future which can have an impact on their current behavior (Hackman, 1987). Resulting from these complexities, Hackman came up with three determinant of group effectiveness that try to solve the previously explained issues within organizations. He defines the concept of group effectiveness by the interplay of (I) productivity, (II) individual development and (III) group viability. His assessment of group effectiveness will be used throughout this paper. In the next section each of the three aspects will be discussed in more detail.

The first criterion, (I) productivity, describes the degree to which the groups product or service meets the needs of stakeholders or clients. Important in this connection is that the particular group meets or even exceeds certain performance standards that are set by these stakeholders or clients. There has been evidence that humor is positively related to the performance on an individual and on a unit level (Avolio, Howell, Sosik, 1999). Furthermore, the use of humor leads to more psychological and physical energy and thus, employees to put more effort into their work when dealing with challenging work duties (Dienstbier, 1995). Moreover, past research has shown that humor has a positive influence on several group productivity factors such as stress reduction (Morreall, 1991), cohesion, communication (Duncan, 1982) and creativity (O'Quin & Derks, 1997). However, as mentioned before, one needs to account for the different effects of adaptive and maladaptive humor. It can be derived that, due to its positive nature, adaptive humor will rather increase group productivity by evoking positive emotions caused by laughter and joy. Contrary, it can be expected that maladaptive humor will decrease

humor productivity, since it puts down others which will have a negative effect on individuals productivity. Hence, the first hypotheses in this study are:

H1a: The use of adaptive humor is positively related to group productivity.

H1b: The use of maladaptive humor is negatively related to group productivity.

The second criterion is (II) development, in which the term can be understood as the way individuals are able to learn from their own experiences and the group environment (Romero & Pescolido, 2008). Ideally, the learning takes place during social processes that maintain or enhance the group's ability to work together on subsequent tasks (Hackman, 1987). Past research has shown that humor has an influence on learning. For instance, Dixon, Wingham, Strano and Chandler (1989) have provided evidence that individuals with high self-reported sense of humor were able to pay more attention and better recall humorous materials. Another research by Gorham and Christophel (2009) confirms these findings, claiming that the amount and type of humor influence learning. The authors have found evidence that humor correlates with overall immediacy and perceived cognitive and affective learning outcomes. Based on these findings, the following hypotheses can be formulated:

H2a: The use of adaptive humor is positively related to the development of groups.

H2b: The use of maladaptive humor is negatively related to the development of groups.

Hackman defines the last of the three group effectiveness aspects, namely (III) group viability, as the social processes that maintain or enhance the group's ability to work together over time (Hackman, 1987). Bell & Marentettes (2011) go one step further and extend the definition of group viability by claiming it to be a requirement for teams to be sustainable and grow in future performances. One can expect that humor can play a major role when it comes to group viability. When used in the right way, humor can improve interpersonal relationships and create

a positive affect within a group which then leads to higher group viability. However, the use of maladaptive humor can also result in the contrary. By this kind of humor, negative emotions can be evoked in the recipients inside of these groups. Hence, I hypothesize:

H3a: The use of adaptive humor is positively related to group viability.

H3b: The use of maladaptive humor is negatively related to group viability.

Psychological Safety

The construct of psychological safety has been described by Edmondson (1999) as “a shared belief held by members of a team that the team is safe for interpersonal risk taking”. The author claims that psychologically safe teams make their members feel respected and accepted. The term has oftentimes been confounded with trust, even though there are differences between these two concepts. Psychological safety addresses a belief about a group norm and is determined by how group members assume they are viewed by others. Trust lays the focus on how a person views another person (Edmondson, 2003). However, (interpersonal) trust is a major part of psychological safety in the sense that team members are comfortable enough to be themselves and be treated with mutual respect (Edmondson, 1999). There are many scenarios in team settings in which members are afraid of repercussions when it comes to sharing ideas. As a consequence, a variety of performance improving efforts is kept private. Psychological safety can help team members to open up and share their knowledge and ideas, wherefore empirical support is also present: It has been shown that psychological safety in teams has an enhancing effect on the likelihood of process innovation to be successful (Baer & Frese, 2002). Also improved team innovation (West & Andersen, 1996), increased employee involvement and engagement (Kark., Ronit, Cameli & Abraham, 2009; Nemhard & Edmondson, 2006) has been found. Furthermore, it helps with learning from errors and mistakes (Edmondson, 1996).

It can be assumed that the concept of psychological safety also plays a major role in the notion of humor. People need to feel safe and secure within their environment to express themselves and especially their humor style. Since humor is a very sensitive topic, people scrutinize even more whether to make use of it or not. This is caused by humor being a very subjective matter that can be perceived as funny by one person, but offending by another. Following this argumentation, it can be assumed that humor has a direct effect on psychological safety. This is in line with the viewpoint of Romero & Pescosolido (2008), who believe that "any link between humor and psychological safety (and thus learning) resides in the ability of humor to create a safe group climate for taking risks and constructive conflict". It can be derived that the use of adaptive and maladaptive humor styles have contrary effects where the use of adaptive humor styles will lead to more psychological safety and the use of maladaptive humor to less psychological safety. Concluding from this discussion, the next two hypotheses of this study will read as follows:

H4a: The use of adaptive humor is positively related to psychological safety.

H4b: The use of maladaptive humor is negatively related to psychological safety.

As previously discussed, psychological safety can lead to a feeling of confidence and security which can ultimately lead to higher group effectiveness. There has been evidence in previous research indicating a link between psychological safety and the three determinants of group effectiveness productivity, development and group viability. A study by Brow and Leigh (1996) has tested the effects of psychological safety on productivity. Results indicated that when employees perceived their organizational environment as psychologically safe, this would lead to more job involvement and effort and hence, productivity would increase. There is also considerable research indicating that psychological safety is linked to the organizations development. The concept of psychological safety has been found to be a key factor in learning of working groups (Edmondson, 1999; Tjosvold, Yu & Hui et al., 2004). Moreover, when it

comes to team based initiatives to foster knowledge sharing and organizational learning, psychological safety has been a major influential factor (Edmondson, 1999; Zellmer-Bruhn & Gibson, 2006 and Tucker, 2007). Reasons for these effects are that psychologically safe environments reduce defensiveness and the fact that employees feel secure enough to experiment with new and risky behaviors when trying to become more efficient and effective (Tjosvold et al., 2004). Lastly, there are also links between psychological safety and group viability. A study by Baer and Frese (2003) has tested the longitudinal effects of psychological safety when implementing process innovations, which is defined as a “deliberate and new organizational attempt to change production and service processes”. The outcome of their study was that psychological safety was positively related to two performance indicators, namely change in return on assets (holding prior return on assets constant) and firm goal achievement. Since the nature of the study was longitudinal and future oriented, one can observe that the groups within the organization led to the successful performances and were hence, viable.

Psychological safety does not only have an influence on the three aspects of group effectiveness, but can also be linked to adaptive and maladaptive humor styles. Past research has indicated more positive relationships between adaptive humor and psychological safety (Wood et al., 2007; Kuiper & McHale, 2009, Cooper, 2005 and Blau et al., 2010) and more negative relationships between maladaptive humor and psychological safety (Wood et al., 2007; Tümkaya, 2007 and Kuiper & McHale, 2009). The rationale is that the use of adaptive humor will make the members feel more secure and safe within the group. The created positive atmosphere and joy helps in the creation of a psychologically safe environment. On the contrary, maladaptive humor leads to stress and negative emotions. Members of the group may feel intimidated and accordingly less psychologically safe. Based on the previous discussion, I expect that psychological safety will have a mediating role in the relationship between humor and the three aspects of group effectiveness. Hence, I hypothesize:

H5a: Psychological safety mediates the relationship between humor and group productivity to the extent that adaptive humor within a group increases a perception of psychological safety which consequently leads to higher group productivity.

H5b: Psychological safety mediates the relationship between humor and group productivity to the extent that maladaptive humor within groups does not produce a perception of psychological safety and consequently lower learnings/development within the group.

H6a: Psychological safety mediates the relationship between humor and group development to the extent that adaptive humor within a group increases a perception of psychological safety which consequently leads to higher group development.

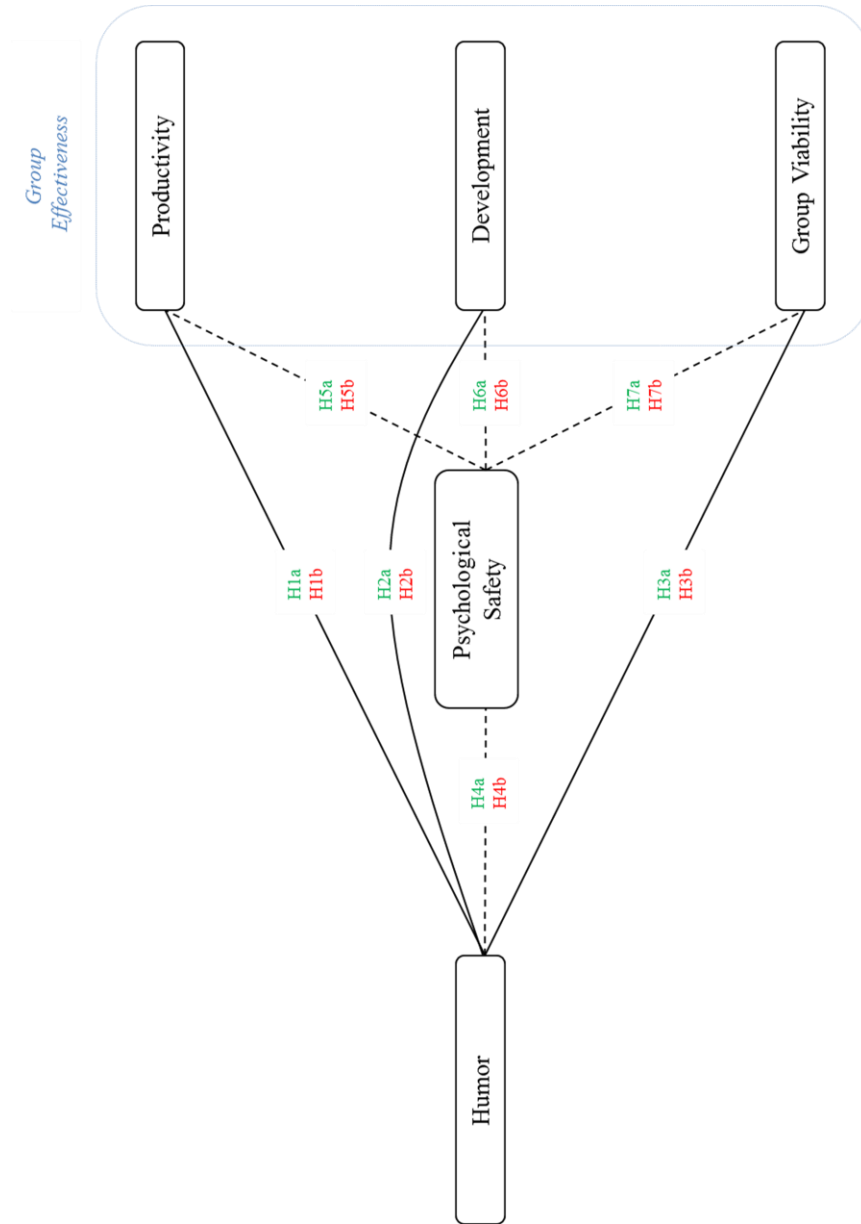
H6b: Psychological safety mediates the relationship between humor and group development to the extent that maladaptive humor within groups does not produce a perception of psychological safety and consequently lower group development.

H7a: Psychological safety mediates the relationship between humor and group viability to the extent that adaptive humor within a group increases a perception of psychological safety which consequently leads to higher group viability.

H7b: Psychological safety mediates the relationship between humor and group viability to the extent that maladaptive humor within groups does not produce a perception of psychological safety and consequently lower group viability.

To sum up FIGURE 2 is a visualization of the several hypotheses that will be assessed:

Figure 2
Hypothesized Model



3. Methodology

Context

The current study employed a survey that has been handed out to students from Maastricht University in the Netherlands, more specifically in the course Management of Organization and Marketing. The university has a reputation for active, student-centered teaching and learning methods by applying the so called “Problem-Based Learning” approach. This method has been used in order to cope with the complexities in societies and facilitates the integration and application of acquired knowledge (Dolmans et al., 2002). Barrows (1996) has been one of the founders of the Problem-Based Learning method. He describes, among other characteristics, that in this system learning occurs in small groups with the guidance of a tutor. Related problems are discussed and serve as a stimulus for learning. Hence, the tutorial groups appear to be a suitable experimental ground to test the effects of humor in groups. More importantly, the tutorial groups fulfill Hackman’s (1987) working group criteria’s that have previously been described (see p.6). Therefore, there is an increase in this study’s external validity, which is the degree to which the results of this study can be generalized to other contexts (e.g. other group settings).

Procedure

Data was collected with the help of a survey that has been carried out during the very last tutorial session of the course Management of Organization and Marketing. There have been 13 tutorial sessions in total over the course of 8 weeks. Tutors that have been contacted in advance and asked whether they would be willing to hand out the survey to their students. Once accepted, the tutors handed out the survey and asked the students to fill them out thoroughly. Remuneration, in order to provide an incentive, was not offered. However, the participants were ensured that the provided information would be treated confidentially and only be used as part

of aggregated data that helps to generate patterns. This has also been done to minimize the effects of the social desirability bias, which is a scenario in which participants answer in a way that makes them appear more favorable to the experimenter (Blumberg, Cooper & Schindler, 2014).

Sampling

The main item that is of interest for this study is “groups”. Obviously, it is virtually impossible to obtain a census of all existing groups. Hence, a judgment sampling (non-probability) has been used to compile the data. The judgmental sampling develops through the researcher’s selection of the sample by members that conform to some pre-defined criterion (Blumberg et al., 2014). Generally, the non-probability sampling can be considered as a biased technique, which prohibits the generalization of result to the whole population (Blumberg et al., 2014 and Tongco, 2007). From a statistical perspective, the method of probability sampling can be seen as superior, but not as the most feasible and efficient method (Tongco, 2007 and Schreuder, Gregoire & Weyer, 2001). Therefore, an increasing number of uses of the non-probability sampling method, especially in business research, can be observed due to the easy use and cost efficiencies (Blumberg et al., 2014). Especially when there are no common scales present and the main interest is not the accurate size of the effect, but rather whether there is a positive or negative effect at all, a purposive sample is not ultimately necessary. Instead, it is adequate when the responses show enough variation, meaning that a non-probability sampling would be sufficient (Blumberg et al., 2014). Taking into account that a census is not feasible for the study at hand, and that the study applies concepts in which no common scale exists (e.g. there is no commonly accepted number or level to quantify humor or group effectiveness) it makes sense to use a non-probability sample. Even more so, when considering that the hypotheses in this study try to investigate whether there are positive or negative relationships at hand, and not how large these effects are.

4. Measures

Demographics

In order to get more value from the survey data, participants were asked to inform about their age (in full years), their gender (1=male and 2= female) and their nationality (1=Dutch, 2=German, 3=Belgian, 4= French and 5=Other).

Humor

The Humor Styles Questionnaire by Martin et al. (2003) served as the basis for assessing adaptive, as well as maladaptive humor. Since the questions used by Martin et al. were directed towards one single individual, they were transformed in order to assess the humor style applied on the tutorial level. In total 16 questions were adapted with four different subscales, namely: the affiliative humor, self-enhancing humor, aggressive humor and self-defeating humor. Afterwards, affiliative humor and self-enhancing humor have been combined and labeled as “adaptive humor style” (AHS), and aggressive and self-defeating humor have been combined and labeled as “maladaptive humor style” (MHS). This was done by adding all the scores of the two humor styles and calculating the respective average of the sum.

Adaptive Humor Style. In total 8 questions from the Humor Styles Questionnaire (Martin et al., 2003) were used to gather insights about this construct, 4 questions directed at the affiliative humor style and 4 directed at the self-enhancing humor style. A 7-point Likert scale ranging from 1 = “strongly disagree” to 7=”strongly agree” was used. Examples for questions on affiliative humor are “In the tutorial we enjoy to make people laugh” and “In our tutorial we don't have to work very hard at making other people laugh - we seem to be a naturally humorous tutorial group”. Examples for questions on self-enhancing humor are “The tutorials humorous outlook on life keeps everyone from getting overly upset or depressed about things” and “In depressing moments the tutorial group cheered up with humor”. Cronbach’s alpha coefficient was 0,96.

Maladaptive Humor Style. Similarly, for the maladaptive humor style 8 questions were used from the Humor Styles Questionnaire (Martin et al., 2003). Again, 4 questions were directed at the aggressive humor style and 4 directed at the self-defeating humor style. The 7-point Likert scale was ranging from 1 = “strongly disagree” to 7=”strongly agree”. Examples for questions on aggressive humor are “When telling jokes or saying funny things, members of the tutorial group are usually not very concerned about how others are taking it” and “If someone makes a mistake, the tutorial group will often tease him about it”. Examples for the self-defeating humor style are “Members of the tutorial group try to make people like or accept them more by saying something funny about their own weaknesses, blunders, or faults” or “Members of the tutorial group laugh at- or make fun at others expense more than they should”. The Cronbach’s alpha revealed to be 0,95.

Psychological Safety

Psychological safety was assessed by using the unidimensional psychological safety 7-item scale by Edmondson (1999) in which responses ranged from 1=“strongly disagree” to 7=”strongly agree”. Items included statements such as “It is completely safe to take a risk on this tutorial”, “Members of this tutorial value and respect each other’s contributions” and “It is easy to ask other members of this tutorial for help” with a Cronbach’s alpha coefficient of 0,89.

Group Effectiveness

Productivity. This variable was measured by 2 items by Ancona & Caldwell (1992) adapted from the “questionnaire on external activity and performance in organizational teams”. The two questions were slightly changed in order to fit the environment of the tutorial and are “My tutorial group is productive” and “My tutorial group was able to respond quickly to problems”. Cronbach’s alpha was 0,93.

Development. The development was measured with the Team Learning Questionnaire (Bresó, Gracia, Latorre and Peiró, 2008) with 4 items on a 7-point Likert scale ranging from 1=“strongly disagree” to 7=“strongly agree”. Items include statements such as “Mistakes are openly discussed in order to learn from them” and “We learn from each other”. According to the authors the construct has very good internal consistency with a Cronbach’s alpha coefficient of 0.91. The current study reveals a Cronbach’s alpha of 0,93.

Group Viability. Items used to measure group viability have been adapted from the “questionnaire on team viability” by Aubé, and Rousseau (2005) on a 7-point Likert scale ranging from 1=“strongly disagree” to 7=“strongly agree”. Example items are “The members of this team could work a long time together” and “Being a member of this team has been personally satisfying”. Cronbach’s alpha was 0,96.

Many of the original scales that have been adapted were developed and designed with a 5-point response format, however the current study has been consistently been using a 7-point Likert response scale. This is based on Blumberg et al. (2014) who claim that unidimensional scales, similar to the ones that have been used in this study, need a greater number of scale points for the sake of more accurate results. The fact that all the measured Cronbach Alpha scores are relatively high and transcend the threshold of 0.8 portends good internal consistency reliability (George & Mallery, 2003).

Control Variables

Control variables have been used and held constant to test the relative relationship between the dependent variables (productivity, development and group viability), the mediator (psychological safety) and the independent variable (humor) in order to increase this study’s internal validity. The first variable that is controlled for is nationality. It has been reported that humor can have different effects depending on the cultural context (Robert & Yan, 2005) or the

ethnicity (Romero & Cruthirds, 2006 and Alden & Hoyer, 1993). The second control variable in the sample is gender, as there may be different influential effects for man and women (Romero & Cruthirds, 2006). Lastly, this study controlled for the respondents age to assess different effects on different age groups as it has been reported by Decker (1987).

5. Analysis

Pilot Study

After the gathering and selection of questions, the final survey has been carried out to a small convenience sample of 15 respondents who have been randomly approached at the entrance of Maastricht University. The location has been selected in order to have a sample of participants of the relevant population and considering that the Problem-Based Learning approach is the main teaching method at the whole university, this has been fulfilled. However, there is the possibility that participants of pilot tests may be influenced in the final study in case they have already taken part in the research (Blumberg et al., 2014). Hence, the participants of the pilot study were asked whether they were taking part in the course Management of Organizations and Marketing and were consequently excluded from the pilot test if they were enrolled in the course. The ultimate goal of the small-scale preliminary study was to ensure to have an adequately designed study by observing whether the questionnaire was comprehensible, applicable and functional. After the feedback, several changes have been made in terms of use of too similar questions and wording of one particular question. After the adjustments, the questionnaire has been carried out to the large scale.

Final Sample

In total 322 participants provided data by filling out the survey. As the main goal of the study is to assess the effect of adaptive and maladaptive humor on group effectiveness, in the first place the two types of humor had to be classified clearly. The process of a clear classification

is important, because there is the chance that respondents rate the group's adaptive humor style items as well as the maladaptive humor style items simultaneously as high or low. Not accounting for this effect could lead to misinterpretation of the results. Thus, two humor style classification criteria's were defined. The first is that respondent's humor style score on one item (e.g adaptive humor style) had to differ from the other humor style (e.g. maladaptive humor style) by equal or more than 15 scale points. The second is that, simultaneously to the first criterion, the sum of one humor style needed to have an overall higher score than the other one. If the responses did not match up with the aforementioned criteria, they were considered as invalid and excluded from the analyses. The scale point difference has been chosen as a threshold, because a difference in 14 scale points is equal to 25 percent which was judged as high enough to separate the two styles of humor. In another form this can be expressed as the following:

$$\Sigma AHS - \Sigma MHS \geq 15 \ \& \ AHS \geq MHS \Rightarrow AHS$$

$$\Sigma MHS - \Sigma AHS \geq 15 \ \& \ MHS \geq AHS \Rightarrow MHS$$

As a result of the classification, the final sample size was found to be 191 respondents. 98 of the total final sample were ascribed to the adaptive humor and 93 respondents were ascribed to the maladaptive humor style. As discussed, the sample mainly consists of students; hence the average age of the participants was 19,77 years. Moreover, there have been more male (55%) than female (45%) participants and Germans (47,1%) and Dutch (26,7%) made up the big majority of represented nationalities, followed by Belgians (10,5%), French (2,1%) and Others (13,6%).

Data Screening and Test of Assumptions

Before the actual hypotheses testing, the data was assessed in order to make sure that the assumptions for the regression analysis were not violated. First of all, it was analyzed whether

the sample size was large enough to find appropriate relationships between the variables. In the past there has been a lot of debate on the “right” sampling size with a variety of recommendations. Harris (1985) proposes that the number of participants should exceed the number of independent variables by a minimum of 50. Van Voorhis and Morgan (2007) define the absolute minimum of 10 participants when using 6 or more independent variables, even though it is better to have 30 participants per variable. A complete different approach was introduced by Morse (2000) who criticizes that literature offers rigid rules rather than guidelines for the accurate sample size. Accordingly, he recommends that scientists base their sample size on the quality of the data, the study design, the possible use of shadowed data and the topic itself. Either way, the sample size of this study complies with the proposed sample sizes.

Next, a correlation analysis has been conducted to quantify the association between the variables. The Pearson correlation coefficients can be found in Table 1 for adaptive humor style and Table 2 for maladaptive humor style.

Consistent with the proposed model, the correlations of adaptive humor with psychological safety (mediating variable) and productivity, development and group viability (dependent variables) show high positive numbers. Maladaptive humor also shows high correlations between the variables and is negatively correlated with psychological safety, which is likewise consistent with the study’s model.

Table 1
Correlations among Study Variables for Adaptive Humor Style

	1	2	3	4	5
1. Adaptive Humor Style	1				
2. Psychological Safety	,255*	1			
3. Productivity	,240*	,580**	1		
4. Development	,353**	,759**	,707**	1	
5. Group Viability	,277**	,830**	,712**	,868**	1

N=98, *p < ,05, **p < ,01, ***p < ,001

Table 2
Correlations among Study Variables for Maladaptive Humor Style

	1	2	3	4	5
1. Maladaptive Humor Style	1				
2. Psychological Safety	-,273**	1			
3. Productivity	-,278**	,719**	1		
4. Development	-,332**	,717**	,707**	1	
5. Group Viability	-,327**	,735**	,787**	,793**	1

N=93, *p < ,05, **p < ,01, ***p < ,001

The correlations between the different dependent variables are relatively high, which could be a sign for multicollinearity, meaning that one variable can be linearly predicted from another variable with a substantial degree of accuracy. In order to exclude multicollinearity the variance inflation factors (VIF) were extracted and analyzed for. In general, this test provides an index

that measures how much the variance of an estimated regression coefficient can be accredited to collinearity and the results can be found in Table 3.

Table 3
Variance Inflection Factors (VIF)

	AHS	MHS
Psychological Safety	3,298	2,651
Productivity	2,181	3,013
Development	6,093	3,909
Group Viability	4,437	3,057

Many researchers have stated that a variance inflection point larger than 10 gives concern for serious multicollinearity (Marquardt, 1970; Kennedy, 1992 and Neter, Wasserman & Kutner, 1989). The tested factors fall under the threshold and hence, multicollinearity can be excluded. In the next step, the basic underlying assumptions of a regression analysis, namely reliability, linearity, normality and homoscedasticity, were tested for. Reliability means that the data has been measured without error and can be checked by the Cronbach alpha, the factor loadings and the composite reliability. In the past Cronbach alpha coefficient scores have been widely used as an estimator of the reliability of tests and scores. The coefficient alpha scores of this study have already been discussed and have shown sufficient numbers above the threshold of 0,70 (Nunnally, 1978). Even though the Cronbach alpha score is widely accepted and applied, there are still critics in its use and interpretation (Cortina, 1993 and Sijtsma, 2009). The main critique is that Cronbach alpha underestimates the true reliability since it is just a lower bound on true reliability which is why researchers started to make use of the composite reliability as an alternative measuring tool (Peterson & Kim, 2013). Appropriately, the more accurate

composite reliability has been calculated and reveals that the scores are likewise higher than the proposed threshold of 0,70 (Hair, 2008). A summary of all the measured Cronbach alphas and the composite reliability can be found in Table 4.

Table 4
Reliability tests

	Cronbach Alpha	Composite Reliability
Adaptive Humor Style	0,96	0,97
Maladaptive Humor Style	0,95	0,96
Psychological Safety	0,89	0,91
Productivity	0,93	0,95
Development	0,93	0,92
Group Viability	0,96	0,97

Last, the factor loadings also indicate unidimensionality of the scales. As a rule of thumb, factor loadings of 0,32 are seen as a minimum loading to be acceptable (Tabachnick & Fidell, 2001), whereas loadings of more than 0,50 are seen as desirable and indicate a solid factor (Osborne & Costello, 2009). All the loadings for this study's factor have exceeded the proposed thresholds by far and can therefore be considered as strongly loaded. A summary of all the measured factor loadings can be found in Table 5.

Table 5
Factor Loadings

	AHS	MHS	PS	P	D	GV
AHS_Q1	0,75					
AHS_Q2	0,94					
AHS_Q3	0,92					
AHS_Q4	0,91					
AHS_Q5	0,74					
AHS_Q6	0,94					
AHS_Q7	0,92					
AHS_Q8	0,93					
MHS_Q1		0,82				
MHS_Q2		0,86				
MHS_Q3		0,92				
MHS_Q4		0,93				
MHS_Q5		0,90				
MHS_Q6		0,81				
MHS_Q7		0,86				
MHS_Q8		0,78				
PS_Q1			0,72			
PS_Q2			0,72			
PS_Q3			0,88			
PS_Q4			0,89			
PS_Q5			0,86			
PS_Q6			0,61			
P_Q1				0,95		
P_Q2				0,95		
D_Q1					0,87	
D_Q2					0,84	
D_Q3					0,85	
D_Q4					0,89	
GV_Q1						0,94
GV_Q2						0,94
GV_Q3						0,93
GV_Q4						0,90
GV_Q5						0,95

AHS=Adaptive Humor Style, MHS= Maladaptive Humor Style, PS= Psychological Safety, D= Development, GV= Group Viability

Linearity was assessed by first checking a matrix scatterplot to see whether the data follow a linear pattern. Afterwards, as a mean to double check, the residual plots were observed in which a random distribution of positive and negative residual values indicate linearity (Hair, 2008). Both measures of the assumption indicated that the variables follow a linear pattern, hence, the assumption is met.

In regression analysis it is assumed that modelling errors are uncorrelated, meaning that their variances do not vary with the modelled effects. If this assumption does not hold, it is caused by heteroscedasticity which occurs when the variance of errors depend on the value of one or more independent variables (Hair, 2008). Heteroscedasticity is not an issue for this study, because the before mentioned residual plots were scattered, hence indicating homoscedasticity. Additionally, the variables were assessed by the Levene's test for equal variances. In line with the previous finding, the significant F values indicated that no heteroscedasticity was present. Lastly, the assumption of normality does not apply for this study, because only continuous data can be normally distributed. Likert scales, as they have been used in this study, are skewed in many cases. Moreover, with the Likert scale we are in the area of the so called non-parametric statistics with ordinal scale data. All kinds of non-parametric statistic are known to be distribution free. Therefore, the assumption about normality for this study is meaningless (Allen & Seaman, 2007).

Hypotheses Testing

This study employed hierarchal multiple regression to test the effects of humor on group effectiveness with the control variables nationality, gender and age. The software that was used for the regression analysis was SPSS Statistics 21.0. The hypotheses were tested in two separate parts: the direct relationships (Hypotheses 1-4) and the mediated relationships (Hypotheses 5-8). When assessed for the direct relationship, the data was split and analyzed for the adaptive humor style and maladaptive humor style. The mediating relationship has been assessed by

Baron and Kenny's (1996) procedure for mediational hypotheses. The goal was to investigate the (mediating) role of psychological safety within the relationship of humor and Hackman's three indicators of group effectiveness (see dashed lines in Figure 2).

Results of Direct Relationships

Hypothesis 1a stated that the use of adaptive humor style would be positively related to productivity in groups. As can be seen from Table 6 the control variables were regressed for first, before adding the independent variable to the regression. Results indicate that the control variables nationality, gender and age predict 8 percent of the variance in productivity (Table 6, Model 1). When adding adaptive humor style (Table 6, Model 2) the prediction of the variance increases by 4 percent to a total of 12 percent. Both, Model 1 and Model 2 were significant, thus Hypothesis 1a was supported. Hypothesis 1b predicted a negative relationship between maladaptive humor styles and productivity. Left alone, the control variables were not able to significantly predict productivity, which can be seen by the low F-value of 1,75 (Table 5, Model 1). However, maladaptive humor style significantly revealed to have a negative relationship towards productivity, while the prediction of variance increased by 9 percent to an overall of 12 percent (Table 7, Model 2). Hypothesis 1b was therefore supported.

Hypothesis 2a stated that adaptive humor would be positively related to the development of groups. Considering the control variables alone did not show a significant relationship ($R^2_{adj}=0,03$, $F=1,83$). The addition of adaptive humor style as an independent variable however, explained an additional 12 percent, increasing the total prediction of the variance to 15 percent. Also, the relationship appeared to be significant ($\beta=.37$, $p<0,001$), thus Hypothesis 2a was significant (Table 6, Model 3 and 4). Hypothesis 2b predicted that maladaptive humor and development in groups would be negatively related. The control variables were not significant (Table 6, Model 3). However, this changed after maladaptive humor style was added as the independent variable and the regression analysis was conducted. Results indicated significant

negative relationship while predicting 13 percent of the variances in group's development (Table 7, Model 4). Therefore, hypothesis 2b was supported.

In hypothesis 3a it was presumed that adaptive humor and group viability would be positively related. As can be seen in Model 6 of Table 6 the relationship showed to be significant and positive ($\beta = .28$, $p < 0,01$), but only after adding adaptive humor in the regression analysis. The control variables alone were not able to predict group viability (Table 6, Model 5). The overall model significantly predicted 7 percent of the variance in group viability ($R^2_{adj} = 0,07$, $F = 3,52$). Hence, Hypothesis 3a was supported. Hypothesis 3b predicted a negative relationship between maladaptive humor and group viability. The control variables alone were again not able to significantly predict group viability (Table 7, Model 5). From Model 6 however it can be observed that, after adding maladaptive humor, the results indicated a highly significant negative relationship between maladaptive humor and group viability ($\beta = -.34$, $p < 0,001$). The model, including the control and the independent variable, significantly predicted 13 percent of the variance in group viability ($R^2_{adj} = 0,13$, $F = 3,29$). Hypothesis 3b is thus supported.

In order to test hypothesis 4a and 4b which anticipated a positive relationship between adaptive humor and psychological safety and a negative relationship between maladaptive humor and psychological safety, a hierarchical multiple regression analysis was run again. From Model 7 in Table 6 we can see that the control variables already significantly account for 9 percent of the variance in psychological safety ($R^2_{adj} = 0,09$, $F = 4,23$). As can be seen in Model 8 in Table 6, adding adaptive humor increased the variance by 5 percent to a total of 14 percent ($R^2_{adj} = 0,14$, $F = 4,97$). Therefore, Hypothesis 4a was supported. Maladaptive humor in Hypothesis 4b per contra showed opposing results. The regression of only the control variables did not indicate to be significant. Also, adding maladaptive humor still indicated no significant relationship with psychological safety as can be seen by the low F-value of 2,09 (Table 7, Model 8), even though the prediction of the variance increased by 0,34 ($R^2_{adj} = 0,46$, $F = 2,09$). The p-value indicated to

be significant at a 10 percent level ($p=0,089$), so just not enough to fall under the threshold of a p-value lower than 0,05. In a last step maladaptive humor and psychological safety were regressed for, unaccompanied from the control variables. The results revealed that the prediction of the variance increased by further 18 percent and showed a significant negative relationship between psychological safety and maladaptive humor (Table 7, Model 9), thus supporting Hypothesis 4b.

In sum, we found evidence that, consistent with the predicted hypotheses, adaptive humor styles have a positive effect on group effectiveness and maladaptive humor styles have a negative relationship to group effectiveness. The control variables did not reveal to be very significant in explaining the Model, except for nationality in the relationship of adaptive humor with psychological safety and development (Table 6, Model 7) as well as maladaptive humor and productivity (Table 7, Model 1).

Table 6
Regression Results Direct Relationships: Adaptive Humor Style

	Productivity		Development		Group Viability		Psychological Safety	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Control Variables								
Nationality	-0,28	-0,25	-0,21*	-0,16	-0,19	-0,15	-0,33*	-0,30
Gender	0,06	0,11	0,08	0,17	0,08	0,14	0,07	0,12
Age	-0,20	-0,18	-0,06	-0,03	-0,14	-0,11	-0,06	-0,03
Independent Variable								
Adaptive Humor Style		0,22*		0,37***		0,28**		0,25*
F-Value	3,91*	4,34**	1,83	5,19***	1,88	3,52**	4,23**	4,97***
R ² _{adj}	0,08	0,12	0,03	0,15	0,03	0,09	0,09	0,14
Δ R ² _{adj}		0,04		0,12		0,07		0,05

Standardized regression coefficient (β's) are shown, N =98, *p < ,05, **p < ,01, ***p < ,001

Table 7
Regression Results Direct Relationships: Maladaptive Humor Style

	Productivity		Development		Group Viability		Psychological Safety		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Control Variables									
Nationality	0,21*		0,129	0,16	0,08	0,11	0,093	0,12	
Gender	0,12	0,10	0,16	-0,01	0,08	0,06	0,04	0,02	
Age	0,06	0,06	-0,04	-0,04	0,08	0,08	-0,04	-0,04	
Independent Variable									
Maladaptive Humor Style		-0,32**		-0,36***		-0,34***		-0,28**	-0,27**
F-Value	1,75	4,02**	0,53	3,71**	0,50	3,29*	0,34	2,09	7,301**
R ² _{adj}	0,02	0,12	0,02	0,15	0,02	0,13	0,12	0,46	0,64
Δ R ²		0,09		0,13		0,12		0,34	0,18

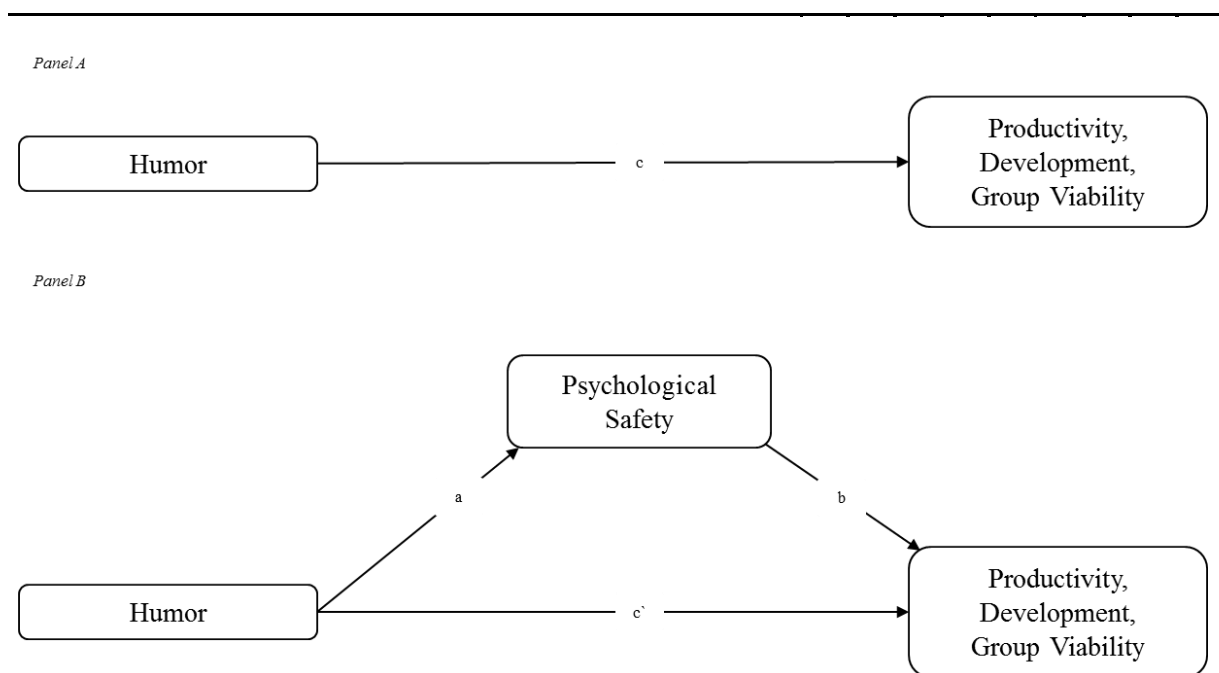
Standardized regression coefficient (β's) are shown, N=93, *p < ,05, **p < ,01, ***p < ,001

Results of Mediated Relationships

To test the mediating effect of psychological safety on the relationship of humor and group effectiveness, this study applied the stepwise method proposed by Baron and Kenny (1986). Three underlying assumptions need investigation in order to conclude that psychological safety has a mediating effect:

1. Humor significantly predicts productivity, development and group viability
(path $c \neq 0$, see Figure 3)
2. Humor significantly predicts psychological safety (path $a \neq 0$, see Figure 3)
3. Psychological safety significantly predicts productivity, development and group viability, when simultaneously running a regression analysis with the control variables nationality, gender and age and the independent variable humor (path $b \neq 0$, see Figure 3)

Figure 3
Mediation Model



Panel A = Without mediation, Panel B= With mediation, based on Baron & Kenny (1986)

If the inclusion of the mediating variable has the effect that the relationship between the independent and dependent variable becomes insignificant, the mediating form is known as *full mediation* (path $c = 0$, see Figure 3) (Baron & Kenny, 1986; Rucker, Preacher, Tomala & Petty, 2011). When the relationship between the independent and dependent variable decreases, however still remains significant, one can observe *partial mediation* (Baron & Kenny, 1986).

The tests of Hypotheses 1-4 can be seen as the first step when investigating the mediating effect. The previously discussed results revealed that all hypotheses had been supported and the first assumption (path $c \neq 0$) has been met (Table 6 and Table 7). This study also found that the use of adaptive humor was positively and the use of maladaptive humor was negatively related to psychological safety, hence meeting the second assumption for a mediating role (path $a \neq 0$). In the third step, the dependent variables were regressed on both, the mediator psychological safety and the independent variables adaptive humor (Table 8) and maladaptive humor (Table 9), respectively.

Results revealed that productivity was found to be significantly related to adaptive humor ($\beta = 0,22$, $p < 0,01$). We then added psychological safety to test for a mediating effect. Since the model became insignificant ($\beta = 0,10$, $p > 0,05$) we can conclude that Hypothesis 5a can be supported and we can observe a full mediation. The same holds for Hypotheses 5b in which maladaptive humor and productivity showed to have a significant relationship ($\beta = -0,32$, $p < 0,01$), whereas the inclusion of the mediator psychological safety led to the model to become insignificant ($\beta = -0,13$, $p > 0,05$), therefore Hypothesis 5b can be supported with a full mediation. Hypothesis 6a predicted a mediating role of psychological safety on the relationship between adaptive humor and development. This hypothesis was partially supported, considering that the addition of the mediator led to the decrease of the coefficient from 0,37 ($p < 0,001$) to 0,19 ($p < 0,01$), while still being significant. Similar results can be seen in Hypothesis 6b. The direct relationship of maladaptive humor and development was initially significant ($\beta = -0,36$, $p < 0,001$). After adding psychological safety as the mediator, the

coefficient decreased but remained significant ($\beta = -0,18$, $p < 0,05$). Hence, Hypothesis 6b is partially supported. Full mediation can be found in Hypothesis 7a. Here the direct effect of adaptive humor on group viability was significant ($\beta = 0,28$, $p < 0,01$), but became insignificant after the inclusion of psychological safety ($\beta = 0,08$, $p > 0,05$), therefore, Hypothesis 7a was supported. Lastly, the relationship of maladaptive humor and group viability was significant ($\beta = -0,34$, $p < 0,01$) and remained significant after the inclusion of psychological safety ($\beta = -0,15$, $p < 0,001$). Seeing that the coefficient decreased, we can conclude that Hypothesis 7b was partially supported.

Table 8
Regression Results: Mediated Relationships AHS

	Step 2 (Path <i>a</i>)	Step 3 (Path <i>b</i> and <i>c</i>)			Step 4 (Sobel test)		
	Psychological Safety	Productivity	Development	Group Viability	Productivity	Development	Group Viability
Control Variables							
Nationality	-0,30	-0,094	0,06	0,11	-0,094	0,06	0,11
Gender	0,12	0,04	0,079	0,04	0,04	0,079	0,04
Age	-0,03	-0,17	0,00	-0,09	-0,17	0,00	-0,09
Mediating Variable							
Psychological Safety		0,518***	0,722***	0,842***	0,518***	0,722***	0,842***
Independent Variable							
Adaptive Humor Style	0,25*	0,10	0,191**	0,08	0,10	0,191**	0,08
F-Value	4,97***	11,203***	28,978***	46,203***			
R ² _{adj}	0,14	0,35	0,59	0,70			
Sobel test					2,4187*	2,5157*	2,5396*

Standardized regression coefficient (β 's) are shown, N =98, * $p < ,05$, ** $p < ,01$, *** $p < ,001$

Table 9
Regression Results: Mediated Relationships MHS

	Step 2 (Path a)	Step 3 (Path b and c)			Step 4 (Sobel test)		
	Psychological Safety	Productivity	Development	Group Viability	Productivity	Development	Group Viability
Control Variables							
Nationality		0,152*	0,82	0,03	0,152*	0,82	0,03
Gender		0,08	-0,02	0,04	0,08	-0,02	0,04
Age		0,09	-0,01	0,11	0,09	-0,01	0,11
Mediating Variable							
Psychological Safety		0,688***	0,669***	0,699***	0,688***	0,669***	0,699** *
Independent Variable							
Maladaptive Humor Style	-0,27**	-0,13	-0,18*	-0,15***	-0,13	-0,18*	- 0,15***
F-Value	7,301**	24,311***	21,235***	23,235** *			
R ² _{adj}	0,64	0,56	0,53	0,55			
Sobel test					2,607**	2,60577**	2,6268* *

Standardized regression coefficient (β 's) are shown, N =93, *p < ,05, **p < ,01, ***p < ,001

Table 10
Regression Results: Mediated Relationships AHS

	β_{direct}	$\beta_{indirect}$	Hypothesized effect	Result
AHS				
H1a: AHS → Productivity	0,22*		+	Supported
H2a: AHS → Development	0,37***		+	Supported
H3a: AHS → Group Viability	0,28**		+	Supported
H4a: AHS → PS	0,25*		+	Supported
H5a: AHS → PS → Productivity	0,10	0,52***	+	Supported
H6a: AHS → PS → Development	0,19**	0,72***	+	Partially supported
H7a: AHS → PS → Group Viability	0,08	0,84***	+	Supported
MHS				
H1b: MHS → Productivity	-0,32**		+	Supported
H2b: MHS → Development	-0,36***		+	Supported
H3b: MHS → Group Viability	-0,34***		+	Supported
H4b: MHS → PS	-0,27**		+	Supported
H5b: MHS → PS → Productivity	-0,13	0,69***	+	Supported
H6b: MHS → PS → Development	-0,18*	0,67***	+	Partially supported
H7b: MHS → PS → Group Viability	-0,15***	0,70***	+	Partially supported

β_{direct} = β coefficient for the direct relationship between independent variable and dependent variable

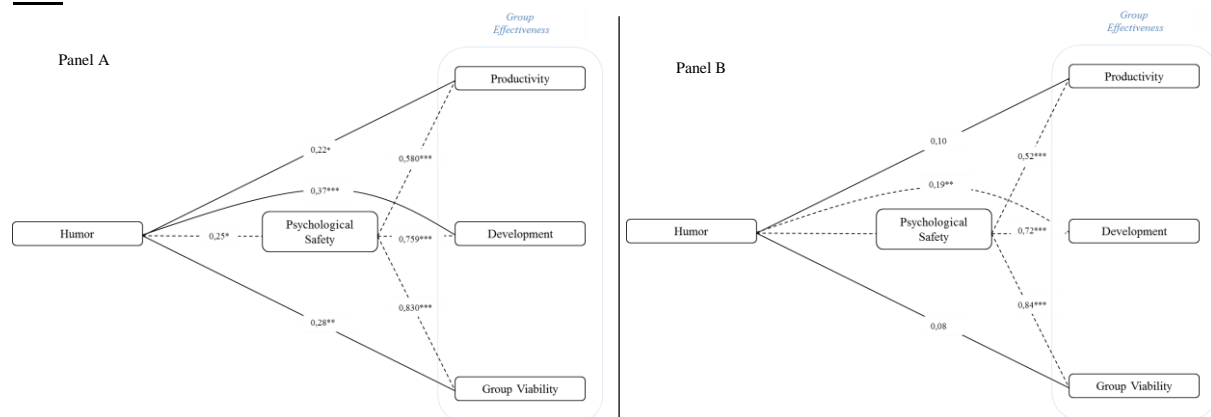
$\beta_{indirect}$ = β coefficient for the relationship between mediating and dependent variable

AHS=Adaptive Humor Style; MHS= Maladaptive Humor Style; PS= Psychological Safety

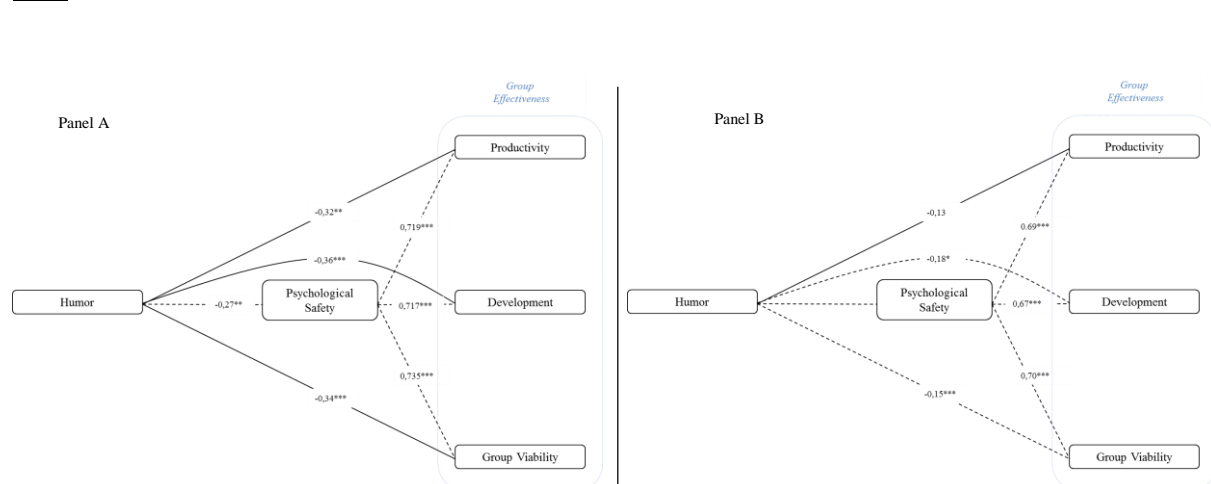
The regression results of the hypotheses can be found in summarized form in Table 10. In addition, the regression coefficient of the direct effects (Panel A) and mediated effects that include indirect and the remaining direct effects (Panel B) are depicted in Figure 4. In Panel B the solid line in the relationship between humor and the three group effectiveness indicators indicate full mediation, whereas the change to the dotted lines indicates partial mediation.

Figure 4
Complete model with β coefficients before and after mediation

AHS



MHS



Panel A only depicts direct relationships before considering mediation

Panel B depicts indirect and remaining direct effects after mediation

Solid lines in Panel B depict full mediation

6. Discussion

The main goal of this study was to assess the relation between adaptive and maladaptive humor and the three indicators of group effectiveness, namely productivity, development and group viability. It was also hypothesized that psychological safety would mediate this relationship. The model was tested through a survey that has been carried out to students in tutorial groups that were taking part in the course Management of Organization and Marketing.

It was first analyzed whether the two types of humor were directly related to the three determinants of group effectiveness, namely productivity, development and group viability. The results revealed that adaptive humor is positively related to productivity, development and group viability. Negative humor, also known as maladaptive humor, revealed to be negatively related to productivity, development and group viability.

Secondly, the goal was to gain insights on the dynamics of *how* humor influences the determinants of group effectiveness. As logically derived in the literature review, this study expected that adaptive humor would create an environment in which group members would feel psychologically safe with higher group effectiveness. On the contrary, it was expected that maladaptive humor would create an environment in which group members feel less psychologically safe which would lead to lower group effectiveness. The rationale is that adaptive humor will take away the fear of negative consequences from interpersonal actions and will create a safe environment with an atmosphere of trust. Maladaptive humor is more aggressive and negatively connoted. Group members will not act the way they would usually do, because they fear any kind of repercussions. Moreover, it leads to discomfort, since group members do not feel treated with respect. The mediator psychological safety showed mixed findings. The results indicate that psychological safety fully mediates the relationship between adaptive humor style and productivity as well as adaptive humor style and group viability on the one side, and maladaptive humor style and productivity on the other side. Partial mediation

was found for the relationship between adaptive humor style and development and the relationship between maladaptive humor style and development as well as group viability. In sum, psychological safety did indeed explain some of the influences that humor has on productivity, development and group viability, but only to a limited extent. These findings will be discussed in more detail in the following section.

Theoretical Implications

The current study is able to contribute to already existing humor, group effectiveness and psychological safety research. First, this study is the first to link humor to Hackman's (1987) normative theory of group effectiveness. Regarding productivity there have been mixed results in previous research. Several scientists have found evidence that humor is associated with increased productivity (Clouse & Spurgeon, 1995; Duncan & Feisal, 1989), which is in line with our finding that adaptive humor increases productivity. Collinson (1988), however, found evidence that humor can serve as a mean to control group productivity by the leverage of work group norms. By ridiculing or teasing a member, he will be encouraged to be more productive in order to earn group rewards (Collinson, 1988). Contrary to that, this study found evidence that the use of maladaptive humor, under which ridiculing and teasing fall, will lead to the opposite, namely lower productivity. There is consensus that humor is positively related to development and especially learning. Early studies, such as from Gruner (1976), found no evidence that humor would lead to more and better learning. This can be explained by the artificial experimental setting that can be criticized, due to the lack of real-life representation. More recent studies however were able to find evidence that humor fosters a learning environment and hence, better development of group members (Ziv, 1988; Gorham & Christophel, 1990). This is in line with the findings of this study, where adaptive humor leads to more development. The role of maladaptive humor in relation to development has not been tested by scientist yet. This study is the first to assess this relationship. Results revealed that

maladaptive humor leads to less development. Lastly, Romero & Pescolido (2008) expect humor to be positively related with group viability. Their explanation is that humor reinforces group viability by creating positive affect, fostering group cohesion and reducing employee turnover (Romero & Pescolido, 2008). This study has been the first to test the direct effect of humor on group viability and found evidence that adaptive humor is positively and maladaptive humor is negatively related to group viability.

Based on the previous discussion one can see that past researches were assessing some of Hackman's three aspects of group effectiveness, but only in an isolated manner. This study assessed all three aspects in an integrated and holistic way. Moreover, this study was able to find evidence that productivity, development and group viability are in fact related to humor. Especially for productivity and group viability, there has not been any clear link yet. Opposing to past research we were also able to specify and clarify the term even further by clearly differentiating the effect of adaptive and maladaptive humor. Subsequently, we found evidence that productivity, development and group viability are positively affected by adaptive humor and negatively affected by maladaptive humor.

Psychological safety has been widely assessed in previous research, also in the role as a mediator, however not directly in combination with humor and group effectiveness. Romero and Pescolido (2008) see the link between humor and psychological safety mainly due to humors ability to create an environment that is characterized by trust and open communication, which in turn facilitates well-being. There are other links with predecessors of psychological safety that have been found to be positively related to humor. Another example is a study conducted by Kuiper and McHale (2009) who found evidence that adaptive humor styles (affiliative and self-enhancing humor) would benefit social self-esteem. Martin and Lefcourt (2004) propose that humorous individuals possess attributes that foster and enhance psychological well-being and others explain the effect by the cognitive flexibility. In other

words, individuals that take on a humorous perspective are able to distance themselves from problems and hence, they take those problems less seriously and feel less stressed (Kuiper, Martin & Olinger, 1993). This study has found similar results leading to the same direction. Results revealed that humor does in fact lead to more psychological safety, and that psychological safety mediates the relationship between humor and group effectiveness. This study was the first to empirically demonstrate the mediating role of psychological safety in the context of humor and group effectiveness. It was not only tested whether humor influences group effectiveness, but the focus was more on trying to understand the psychological processes that led to the mediating effects.

Limitations

Despite the contributions that this study was able to make, there are still limitations that need to be addressed. Firstly, for the most part the control variables did not reveal to be statistically relevant in the models that were being assessed (except in the relationship between adaptive humor and productivity as well as psychological safety, see Table 6, Model 1 and Model 7). One explanation is that the demographics of the students in the tutorials who filled out the questionnaire were too similar. Even though, Maastricht University claims to be a very international university, the fact that more than 70 percent of the participants were from the Netherlands and Germany cannot be denied. Also, the average age of 19,54 years makes it hard to generalize this study's finding to the whole population. A replication of this study with more variation in the sample is therefore advisable. Secondly, one can scrutinize whether the setting of a tutorial group is representative of every existing group, let alone in organizational settings. It was attempted to have a setting that met criteria's that were predetermined by Hackman (1987). Nonetheless, it is debatable whether an educational setting that is not connected with remunerations (even though some might argue that grades can be seen as a form of remuneration) is applicable enough to a group in a medium or large sized firm. Thirdly, as I

have been a tutor myself in the course Management of Organization and Marketing, there is the possibility that some students were concerned with the confidentiality of the gathered data. It was contemplated to minimize the social desirability bias by ensuring confidential treatment of the data, however due to my role it is impossible to fully preempt the bias. It is possible that some students feared negative consequences for their grades, by me forwarding the data to their tutor despite the promise that I would not do that. Lastly, it can be debated whether the concepts of adaptive and maladaptive humor can be differentiated the way that it has been in for this study. One argument could be that it is not always easy to distinguish the two concepts. As such, one can rate a group as having elements of both types of humor at the same time. Another critique can be that the concept of humor is too complex in order to classify them in a “black and white” manner as it has been done in the Humor Styles Questionnaire (Martin et al., 2003) that has been adapted for this study. However, the classification has been adapted by many scientists in the past (e.g.: Hampes, 2006, Kuiper & McHale, 2009; Yip & Martin, 2006), which points towards validity and is also necessary to get a first clear picture of the concept.

Practical Implications

There are a variety of practical implications that can be deducted from this study’s findings. One is that the results underline the multidimensionality of the concept of humor in which adaptive and maladaptive humor styles show opposing effects towards group effectiveness. Hence, it is consistent with past researches that have designated humor as a double-edged sword, which can benefit, but also harm organizations (Romero & Pescolido, 2008; Rogerson-Revell, 2007; Lyttle, 2007).

Humor can be used to disclose organizational values and behavioral norms. Humorous actions and stories describe desirable and undesirable employee behavior by emphasizing actions that are representative of desired values and norms (Meyer, 1997). The main influence that humor can have is on the organizational culture. This starts when hiring employees, forming groups

or teams or leader selection. In the hiring process humor measures can be applied when selecting potential employees. By that individuals that match a preferred humor style are identified, which results in the creation and maintenance of a “fun culture”. Also, the humor culture will be unique and throughout consistent within an organization. Humor seminars can be implemented to train managers and group members. Examples could be modules that teach participants of the seminar to choose the appropriate humor style for a given situation or how to match humor styles to a specific organizational outcome. Southwest Airlines for instance, is very well known for their successful use of humor by the integration into ceremonies, company motto, songs and social events (Barbour, 1998).

Leaders have a very central and important role when considering the use of humor in enterprises. The development of humor skills can benefit leaders when managing emotions within groups. It is hereby important that they set an example and act as a role model when integrating humor in the group or the organizational culture. This can be implemented, for instance, by the punishment of users of “extreme” maladaptive humor such as racist or sexist jokes, or the constructive use of adaptive humor when cheering up a depressed group. It is debatable whether the use of maladaptive humor can be completely eliminated, however there are ways to minimize the effects of potentially offensive effects of joking behaviors. The major one is to create an environment based on trust. Lastly, the use of adaptive humor can be beneficial in stress situations. When leaders correctly make use of adaptive humor, this can ease the situation and create a psychologically safe environment. As a result, group members can focus on their designated tasks will take more risk and feel less stressed.

Humor was and will always be a sensitive topic, due to its ambiguous nature. Leaders, managers and employees should be aware of that and behave accordingly. Based on this study’s findings, Duncan’s (1982) basic guidelines for successful use of humor need to be accentuated. He claims that every group member should recognize the dignity of all individuals, humor should be used

reciprocal, everyone should appreciate the power and influence of the group, and that employees need to have confidence in the manager's objectivity and sense of justice. If everyone sticks to these principles, conflicts will be avoided and an effective use of humor can be ensured.

Future Research

This study can serve as a starting point for further research in the use of humor in groups and teams. Firstly, there were no evidence for a clear effect of the control variables nationality, gender and age which is contrary to previous research that has been conducted (Hay, 2000; Romero & Cruithirds, 2006; Decker, 1987). Future research could go into more depth into which environment, individual and conceptual differences effect the successful use of humor within groups. It can be assessed whether older or younger group members are more responsive to the use of (adaptive) humor or whether differences between industries or the type of work exist. This could range, for instance, from operational to more innovative and creative tasks. Moreover, there may be different effects in the recipient of humor when it is being used by a leader or a general member. Studies on leader humor can shed light on this matter. Secondly, the tutorial groups in which the questionnaires have been carried out represent a unique environment. The same test with groups in, for example, a corporate level may prove to be valuable. Thirdly, as it has been noted group effectiveness is a very broad concept that has been the subject of discussion of several scientists (Cohen & Bailey, 1997; van der Haar et al., 2013; Tannenbaum et al., 1992). In order to account for the variety of definitions, testing the effect of humor with different assessment methods of group effectiveness is recommended. Fourthly, for convenience purposes the four different humor styles were grouped into adaptive and maladaptive humor. However, it is possible that the styles within one of the two types might give further insights. A study conducted by Kuiper and McHale (2009) has shown opposing effects of self-defeating and aggressive humor. They indicate that the first does in fact

psychological well-being, though the latter does not. Consequently, further research should differentiate between all four humor styles as it has been proposed by Martin et al. (2003). Lastly, the employment of other method designs is recommended. A practical example of assessment is the implementation of a longitudinal diary study in which one can observe long term changes, effects and daily fluctuation.

7. Conclusion

Groups are a major part in today's work environment. Potential prospects for vacant positions need to have a degree of teamwork abilities. This can reach so far that a lack of teamwork skills can constitute an exclusion criterion. Intergroup and interpersonal relations within groups vary greatly and an influential factor is represented by the role of humor which has experienced a growing amount of attention. This study is, to the best of my knowledge, the first to analyze the effects of humor on group effectiveness, with psychological safety as a mediator. Results indicated the positive effect adaptive humor and the negative effects maladaptive humor can have on the three group effectiveness indicators which are productivity, development and group viability. Psychological Safety was found to mediate the relationship between humor and group effectiveness, with results being fully (AHS and productivity & group viability; MHS and productivity) and partially supported (AHS and development; MHS and development & group viability). The outcomes can help organizations understand the multifaceted effects that humor can have, where the term double edged sword has shown to be an appropriate expression. However, the outcomes should be seen as a starting point which needs further research and assessment in the relatively newly explored topic of humor as it can benefit organizations in many ways.

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Appendix

Questionnaire:

Dear participants of this survey,

thank you for completing the survey which is part of my master thesis. Every single filled out survey will be extremely valuable and helpful to test my model.

To analyze the data, I am kindly asking you to state your ID number (no name is needed) when filling out the survey. I promise that the provided information will be kept confidential and will only be used as part of aggregate data that helps to generate patterns.

Sincerely,

Omran Bedar

o.bedar@student.maastrichtuniversity.nl

Demographics

Q1: What is your gender?

- ☐ Male
- ☐ Female

Q2: What is your age?

Q3: What is your nationality?

- ☐ Dutch
- ☐ German
- ☐ Belgian
- ☐ French
- ☐ Other: _____

Q4: Below is a list of statements describing this tutorial group. Please read each statement carefully and indicate the degree to which you agree or disagree.

Humor Styles

(AHP) indicates questions that assess the adaptive humor style and (MHP) indicates questions that assess the maladaptive humor style.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
<u>AHS</u>							
(R) In the tutorial we rarely make people laugh by telling funny stories about ourselves.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In our tutorial we don't have to work very hard at making other people laugh - we seem to be a naturally humorous tutorial group.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We laugh and joke a lot within the tutorial.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the tutorial we enjoy to make people laugh.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When feeling sad or upset, members of the tutorial group usually lose their sense of humor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When feeling upset or unhappy members of the tutorial usually try to think of something funny about the situation to make everyone feel better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The tutorials humorous outlook on life keeps everyone from getting overly upset or depressed about things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In depressing moments, the tutorial group cheered up with humor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<u>MHS</u>							
If someone makes a mistake, the tutorial group will often tease him about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When telling jokes or saying funny things, members of the tutorial group are usually not very concerned about how others are taking it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even if a joke is not appropriate for the situation, members of the tutorial group cannot stop themselves from saying it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When its obvious that someone is not being liked, members of the tutorial often use humor or teasing to put that person down.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Members of the tutorial group laugh at- or make fun at others expense more than they should.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Members of the tutorial group try to make people like or accept them more by saying something funny about their own weaknesses, blunders, or faults.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are certain members in the tutorial group who often seem to be the one that other people make fun of or joke about.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Letting others laugh at oneself is used to keep the tutorial in good spirits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Psychological Safety

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
(R) When someone makes a mistake in this tutorial, it is often held against him or her.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(R) In this tutorial, members are sometimes rejected for being different.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is completely safe to take a risk on this tutorial.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Members of this tutorial value and respect each other's contributions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In this tutorial, it is easy to discuss difficult issues and problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to ask other members of this tutorial for help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Productivity

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
My tutorial group is productive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My tutorial group was able to respond quickly to problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Development

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Mistakes are openly discussed in order to learn from them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We learn from each other.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge is shared among the different team members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Different points of view are expressed openly and sincerely.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Group Viability

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Being a member of this team has been personally satisfying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would choose this team to work with on similar tasks in the future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being a member of this team was a positive experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When a problem occurs, the members of this team manage to solve it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The members of this team could work a long time together.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>